

North Access Feasibility Study

DENALI

National Park and Preserve – Alaska

April 1997



United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

OCT 29 1997

Honorable Frank Murkowski
Chairman, committee on Energy
and Natural Resources
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

Language contained in Senate Amendment #39, page CR H14289 for Fiscal Year 1996 directed that:

"The National Park Service shall within existing funds, conduct a Feasibility Study for a northern access route into Denali National Park and Preserve in Alaska, to be completed within one year of the enactment of this Act and submitted to the House and Senate Committee on Appropriates and . . . The Feasibility Study shall ensure that resource impacts from any plan to create such access route are evaluated with accurate information and according to a process that takes into consideration park values, visitor needs, a full ranges of alternatives, the viewpoints of all interested parties, including the tourism industry and the State of Alaska, and potential needs for compliance with the National Environmental Policy Act . . ."

Enclosed is a copy of the Denali National Park Northern Access Feasibility Study. The analysis was conducted by National Park Service personnel permanently assigned in Alaska with the cooperation of the State of Alaska and other interested parties.

The study is an objective analysis of factual data gathered from credible sources. The engineering cost information for a road was prepared by the State of Alaska Department of Transportation and Public Facilities. The engineering cost information for a railroad came from the Alaska Railroad Corporation and others. Information on demand and visitor experience is based on data from the National Park Service, the Alaska Division of Tourism, the Alaska visitors Association, and a private consultant experienced in Alaska tourism. Public meetings were held to gather additional information on feasibility and provide the public with an understanding of the feasibility process.

The study does not include an environmental analysis and was not conducted in accordance with the National Environmental Policy Act. References to the relationship between a second (or northern) access, and the park's existing general management plan and other approved plans affecting Denali, are presented as factual data only. A new north access is contrary to the existing management plan.

A project of this magnitude within a unit of the National Park System would require extensive environmental planning and review to determine whether it is consistent with the mandate of the National Park Organic Act, the park's enabling legislation, and other laws. In addition, the visitor accommodations at Denali, such as the recently approved development plan and environmental impact statement for the park entrance area and road corridor. Also, the development plan for the South Side of Denali has been recently adopted by the National Park Service and the extensive process or environmental review for a new north access. But, this study includes an assessment of the funding and time needed for such an effort.

The projected costs of either new road access or rail access into Denali would exceed the projected costs for the National Park Service's 10-year, visitor access development program for the entire State of Alaska. Thus, we believe this study must be considered in conjunction with the other National Park Service proposals for visitor facilities and access in Alaska - - proposals developed with input from the State of Alaska, the visitor industry and the public.

This study is not to be interpreted in any way as implying that the National Park Service supports a northern route. Again, a new north access is contrary to the existing management plan for Denali National Park and Preserve.

As you review these findings, we are available to review in more detail, the underlying data and discuss any of the outstanding issues with you or members of the committee.

An identical letter is being sent to the Honorable Slade Gorton, Chairman, Subcommittee on Interior and Related Agencies, Committee on Appropriations, United States Senate.

Sincerely,

/s/

Brooks B. Yeager
Acting Assistant Secretary
Policy, Management and Budget

Enclosure

CC: Honorable Robert C. Byrd Ranking Minority Member

DENALI NATIONAL PARK

NORTH ACCESS ROUTE FEASIBILITY STUDY

Report to
The House and Senate Committees on Appropriations
The Senate Committee on Energy and Natural Resources
The House Committee on Resources

April, 1997

EXECUTIVE SUMMARY

The National Park Service (NPS) was directed by Public Law 104-134 (April 26, 1996) to conduct within one year and existing funds, a feasibility study in cooperation with the state of Alaska for a new north access into Denali National Park and Preserve. This feasibility study limited its evaluation to considering two transportation modes, road and rail, along one corridor and did not address all aspects of feasibility. The study did not quantify the need for ancillary facilities such as hotels, visitor centers, and depots. The study did not attempt to address the impacts of a new north access on park environmental values or analyze the affects on park operations or the visitor experience. The study focus was on collecting and evaluating existing information rather than generating new data. The study does not contain recommendations and it is not a decision document.

Denali National Park and Preserve is a 6-million-acre unit of the national park system in the subarctic interior of Alaska. The 80-year-old park straddles the Alaska Range and includes Mt. McKinley, the tallest peak in North America. The park is known worldwide for its wilderness qualities and opportunities to see wildlife, and the public mandate for park administrators to preserve those qualities for future generations is well defined both legislatively and in NPS management plans. Visitation is concentrated in the 120-day summer season and is focused on the 90-mile park road that runs from the George Parks Highway to Wonder Lake/Kantishna. Kantishna is a former mining community that currently consists of about 381 acres of patented mining claims and other private lands, including four seasonal lodges. There are also about 3,300 acres of unpatented claims in the Kantishna area.

ROAD CONSTRUCTION FEASIBILITY AND COST ESTIMATES

Standard construction practice for Interior and Arctic Alaska is sufficient to build a road from the George Parks Highway near Healy to the Wonder Lake/Kantishna area. Construction costs for gravel and paved road alternatives, estimating the road at 80 miles long, are \$87,400,000 (\$1,092,500 per mile) and \$100,050,000 (\$1,250,625 per mile), respectively (1997 dollars). The Alaska Department of Transportation and Public Facilities estimates that once NEPA compliance is completed, route planning, survey, and design expenditures represent an additional 9% of the construction amount.

RAILROAD CONSTRUCTION FEASIBILITY AND COST ESTIMATES

Neither terrain nor topography would preclude construction of a railroad to the Wonder Lake/Kantishna area. Cost projections for constructing a railroad, estimating an 86- to 95-mile route, range from \$136,125,000 (\$1,512,500 per mile) to \$213,603,360 (\$2,483,760 per mile) (1997 dollars). The Alaska Railroad Corporation and others indicated that route planning, survey, and design costs would be an additional 15% of the construction amount. A more in-depth review is needed to determine whether a privately funded, privately operated railroad is economically feasible, although initial review shows economic feasibility is unlikely.

MAINTENANCE FEASIBILITY AND COST ESTIMATES

The Alaska Department of Transportation and Public Facilities estimate for the annual maintenance and operation costs for a seasonal-use gravel road is \$555,000 per year (\$6,937 per mile). Annual maintenance costs for a seasonal-use, paved road are estimated at \$120,000 to \$210,000 per year (\$1,500 per mile to \$2,625 per mile). Providing year-round access to Kantishna on a paved road would cost about \$600,000 per year (\$7,500 per mile).

The Alaska Railroad Corporation estimates maintenance of a seasonal use north access railroad would cost about \$300,000 per year. The cost to maintain the system for year-round use would be about \$700,000. The maintenance of rolling stock and the cost of providing utility support (power, water, sewer, and communications) for depots at each end are not included in these figures.

ROUTE FUNCTION AND DESTINATION

A new north access, either road or railroad, would provide additional, potentially year-round, access to Kantishna landowners and businesses as well as create recreational opportunities for visitors. Regardless of the form, road or railroad, a new north access would not meet all the needs of the Kantishna inholders, and their use of the existing park road would continue. A road or a railroad that stopped short of Wonder Lake/Kantishna would not provide access to the Kantishna landowners and businesses.

A road or railroad that stops short of Wonder Lake/Kantishna was also considered during the study. Any new access would have to go at least to Myrtle Pass, about 65 miles or three-fourths of the distance to Wonder Lake, to provide the opportunity for outstanding views of Mt. McKinley.

A new north access to Wonder Lake/Kantishna would create a transportation loop between the park's frontcountry and the Wonder Lake area. Whether or not this loop could be used to provide greater access to the park's interior in a manner that met visitors' needs has not been explored. Currently, most visitors traveling the park road turn around at destinations short of Wonder Lake and spend less time on their bus trip in the park than would be required to complete a park road/north access loop. No analysis has been done to determine if a loop transportation system could be established without compromising the current park road experience.

USER DEMAND

Nonresidents make up the largest component of tourists in the state and at Denali National Park and Preserve. A vast majority (95%) of all nonresident vacation visitors come to Alaska in the summer. Uppermost projections based on state data indicate that visitation to the state as a whole and to Denali could double in 14 to 18 years. In 1996 about 341,000 visitors made more than 540,000 visits to Denali National Park and Preserve. A new north access route would have a greater effect on the number of visits than on the number of visitors. For some visitors it would provide an additional opportunity to visit the park. Others would substitute the north access trip for some other park experience.

Projections using state traffic estimates and assuming a minimum ridership per vehicle indicate that a north access road would be used by more than 247,000 people per year. The package tour industry's use of a north access road would depend on the availability and relative cost of similar experiences (wildlife,

scenic beauty, and close proximity views of Mt. McKinley) elsewhere.

Cost is a factor that would affect the ridership of a north access railroad. In 1996 more than 202,000 people paid from \$26 to \$99 each for a bus trip on the park road to Wonder Lake/Kantishna. The Alaska Railroad Corporation, Kantishna Holdings Inc., the proponents of a privately funded, privately operated railroad to Wonder Lake, and others believe that \$100 is the maximum ticket price the market would support for a trip on a north access railroad. An NPS consultant performed a cost recovery analysis for a privately funded railroad. With an assumed initial ridership of 102,168 people (one train per day for the summer season), this analysis determined that, depending on the cost of the project, ticket prices might need to be as high as \$235 to recover the initial investment over a period of 20 years.

Fewer than 29,000 visitors came to Alaska for vacation in the winter of 1994–95. The growth rate for winter nonresident vacation visitation is about half the summer rate. Based on this data, it is unlikely that a north access into Denali National Park would have much use by nonresidents during the off-season without a major marketing effort.

The addition of other visitor facilities in the park and the development of other visitor destinations in the state could affect visitation to the park and the use of a new north access to Wonder Lake/Kantishna. The visitation growth projections for the park and estimates of use of a new north access contained in this report make no allowance for this. The National Park Service recently completed the *Entrance Area and Road Corridor Development Concept Plan* (NPS 1996a) and *South Side Denali Development Concept Plan* (NPS 1996b). The development package for the south side of the park includes road improvements, visitor centers, campgrounds, and highway waysides and is expected to serve about 240,000 visitors per year.

VISITOR EXPERIENCE

The primary focus of most visitors to Denali is to see Mt. McKinley and to observe wildlife in a wilderness setting. A new north access would provide more opportunities for distant views of Mt. McKinley than exist along the park road. In addition, close proximity views of the mountain would be possible beginning at Myrtle Pass (65 miles from the Parks Highway) and continuing west to Wonder Lake. Visibility of the mountain would be similar to the visibility from Eielson Visitor Center on the park road. Lower population densities, habitat differences, and seasonal use patterns combine to make the chances for seeing wildlife along a new north access less than on the existing park road.

LAND STATUS

Of the estimated 80 miles of the Stampede corridor from the George Parks Highway in the Healy area to the Moose Creek bridge in Kantishna, about one-third is on state-owned lands and two-thirds is on federal (national park) land. No private inholdings would be crossed by a road or railroad while in the park. There are scattered private parcels and a 160-lot subdivision with about 80 households in the state land on the east end of the corridor.

IMPLEMENTATION PROCESS AND ENVIRONMENTAL REVIEW

A decision to proceed with the consideration of a north access project could require 8 to 9 years and cost \$4 to \$6 million for NEPA compliance and environmental studies. The National Park Service and the State of Alaska would work cooperatively to complete needed studies and plans before construction. If Congress requests further consideration of this project, the following steps should be followed: additional economic analysis; a *General Management Plan* amendment / environmental impact statement; and a route location study / environmental impact statement. Detailed route design and construction would follow. Each major planning step would represent a decision point with public involvement. Controversy and other complexities could add time and cost to the process.

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INTRODUCTIONINTRODUCTION

The Department of the Interior's 1996 appropriations act includes the following directive for Denali National Park and Preserve:

The National Park Service shall within existing funds, conduct a Feasibility Study for a northern access route into Denali National Park and Preserve in Alaska, to be completed within one year of the enactment of this Act and submitted to the House and Senate Committee on Appropriations and. . . . The Feasibility Study shall ensure that resource impacts from any plan to create such access route are evaluated with accurate information and according to a process that takes into consideration park values, visitor needs, a full range of alternatives, the viewpoints of all interested parties, including the tourism industry and the State of Alaska, and potential needs for compliance with the National Environmental Policy Act. The Study shall also address the time required for development of alternatives and identify all associated costs. This Feasibility Study shall be conducted solely by the National Park Service planning personnel permanently assigned to National Park Service offices located in the State of Alaska in consultation with the State of Alaska Department of Transportation.

Public Law 104-134 (April 26, 1996)

This law stated that the feasibility study would be completed within one year and that it would be submitted to the House and Senate Committees on Appropriations and to the Senate Committee on Energy and Natural Resources and the House Committee on Resources. As a result of this legislation, the National Park Service (NPS) has conducted a feasibility study for a northern access route into Denali National Park and Preserve in Alaska, in cooperation with the Alaska Department of Transportation and Public Facilities (ADOT/PF), other state agencies, and other organizations. This document is intended to provide a starting point for evaluating proposals for a new north access route into Denali National Park. It contains factual information from a broad spectrum of individuals and groups with interest and knowledge regarding the subject. The study answers the questions of whether a new north access route can be built and at what cost. It also explores issues such as destination, route function, and potential user demand and expectations. The study does not contain recommendations and it is not a decision document.

PURPOSE AND APPROACH

The purpose of this study is to present an initial evaluation of the feasibility of a new north access route to the Wonder Lake/Kantishna area of Denali National Park and Preserve. The study addresses some basic feasibility issues on a broad scale. At the suggestion of Congress, the study also considers two transportation modes, road and rail, along the Stampede corridor (see Location and Study Area maps). The study area is defined as a broad corridor rather than a narrow strip centered on a potential RS2477 alignment. This allows resource considerations, engineering, and economic feasibility to be primary considerations in the route selection process. The study does not address the feasibility of a major hotel development or other visitor facilities on park lands at Wonder Lake or at any other location along the corridor. In addition, the study assumes that the current park road experience as outlined in the recently completed *Entrance Area and Road Corridor Development Concept Plan / Environmental Impact Statement* (NPS 1996a) will remain in place.

The study develops a list of questions; the answers to the questions provide the basic study components. Workgroups consisting of NPS and state employees were formed and assigned individual components of the study. Each workgroup sought out and communicated with individuals and organizations that have a special interest in, knowledge of, or information about a northern access route. The workgroups attempted to obtain as much accurate and complete information as possible. Public information open houses were held in December 1995, five months before the legislation was passed, and again in January 1997 to identify interested parties, present information regarding the study, and provide the public with an opportunity to present additional views and information. Although gauging public support for a new north access route was not the intent of these open houses or a part of this study, the feedback received at the meetings and during the study indicates that the issue has high public interest and that the full spectrum of opinion for and against a new north access is well represented. In February 1993 the Denali Borough assembly passed a resolution in support of the plans of the Kantishna Group Inc. to construct and operate a tourism railroad into the park. The assembly also encouraged the National Park Service to give full support to the creation of a railroad utility corridor.

Many people and agencies have contributed to this study (see "Preparers and Consultants" section at the end of this document). Time and budgetary constraints dictated that the study focus on selected topics and existing information. In some cases very little data exists. Each workgroup attempted to sort out opinion from fact, striving to limit the study contents to facts as much as possible. The identification of the data needs became an additional objective of the study (see the appendix).

The study components consist of the following:

Construction Feasibility/Cost Estimates — Can this access be built? What are the projected costs?

Maintenance Feasibility/Cost Estimates — How can the maintenance needs for a road/railroad be met and at what cost?

Route Function and Destination — What purpose would a new north access route serve? Would it need to go all the way to Wonder Lake/Kantishna?

LocationLocation map

PURPOSE AND APPROACH

Study AreaStudy Area map

User Demand — What is the demand for a new north access route, who would use it, and how much would users be expected to pay?

User Cost and Capital Recovery — Can the capital costs for a new north access route be recovered through user fees, and what would be the cost to the visitors?

Visitor Experience — What experience would a new north access route offer to visitors? What are the expectations of visitors likely to use it, and are they realistic?

Socioeconomic Considerations — What are the social and economic ramifications of a new north access route?

Land Status — Who owns and manages the land along the north access corridor?

Management History — What are the legislative and administrative guidelines or mandates governing the management of those lands?

The Implementation Process and Environmental Considerations — What is the process that would need to be followed and what are the National Environmental Policy Act (NEPA) considerations? How long would it take and what would be the cost?

STUDY COMPONENTS AND RESULTS

ROAD CONSTRUCTION FEASIBILITY AND COST ESTIMATES

Standard construction practice for Interior and Arctic Alaska is sufficient to construct an 80-mile road from the Parks Highway to the Wonder Lake/Kantishna area along the Stampede corridor. The concept of a north access transportation route to the Wonder Lake/Kantishna area is not new. The idea was first proposed and debated before 1920, in the early days of the park, as an alternative route for the existing park road. The concept of a second road into the park has surfaced a number of times since. The state spent \$250,000 in 1961 to fund the construction of a pioneer road along the first 50 miles of the Stampede route, to the Stampede Mine. The first 8 miles of this road are still in use, a portion of the remainder is used by ATVs for recreation and hunting access, and the rest has never been used as a road.

The Alaska Department of Transportation and Public Facilities is the primary source of information on the construction feasibility and cost of a new road for this study. This information has been supplemented by information from earlier NPS studies including the 1994 *Alternative Transportation Modes Feasibility Study* prepared by BRW, Inc.

Construction feasibility and costs are largely influenced by the type of road that would be constructed. Specific design would be almost entirely a function of the size and volume of expected traffic and the speed at which the traffic would travel. Therefore, the cost of the road is a function of anticipated use. Costs increase as design standards and carrying capacity increase. A pioneer road was not considered in this study because pioneer roads are generally used for temporary access only, and such a road would not meet the intent or the need for a new north access route. ADOT/PF experience has shown that converting a pioneer road to a modern road generally results in a higher overall construction cost and that the finished product often has greater long-term maintenance problems and higher annual maintenance costs than a properly designed and constructed road over the same terrain.

Estimates vary for the potential average daily traffic volume (ADT) on a new road from the Parks Highway in the Healy area to Kantishna. BRW estimated an average daily traffic volume of 500 for a new north access road. The Alaska Department of Transportation and Public Facilities estimated an initial average daily traffic volume of 1,100 in the 1994 *Railbelt to Kuskokwim Valley Location Study* (ADOT/PF 1994), and they used that number for this feasibility study. Both BRW and the Alaska Department of Transportation and Public Facilities were in agreement that the minimum road width should be 28 feet. This would provide for two 12-foot driving lanes with 2-foot shoulders on each side. Anything less would be a hazard for pedestrians and bicyclists, and there would be insufficient room for a vehicle to pull over and stop without impeding traffic. If a new north access road were proposed, this profile would be evaluated for compliance with current state and federal standards prior to design. The Alaska Department of Transportation and Public Facilities has a rule of thumb that any road with an average daily traffic volume of more than 300 should be paved. At an ADT of 300 or more, there is inadequate time between vehicles for the dust to clear and visibility becomes a problem. Higher traffic levels on gravel roads lead to higher annual maintenance costs and vehicle damage from rocks and gravel. For comparison purposes, the average daily traffic on the existing park road under the current controlled access system peaks at about 200 in the middle of summer.

The construction of a new north access road would not require new or unproven engineering technologies. Standard practice for road construction in Interior and Arctic Alaska would be applied. Construction cost estimates for paved and gravel road alternatives are \$100,050,000 (\$1,251,000 per mile) and \$87,400,000 (\$1,093,000 per mile), respectively, and are listed in table 1. (All cost estimates are 1997 dollars.) About one-third of this cost would be for bridges. Construction costs assume minimized haul distances and the use of in-park sources for gravel on the portion of the road inside the park. The Alaska Department of Transportation and Public Facilities estimates that once NEPA compliance is completed, route planning, survey, and design costs would add 9% to the construction amount. According to National Park Service estimates, completing necessary environmental studies and conducting NEPA compliance would add about \$4 million to these totals.

TABLE 1: NORTH ACCESS ROAD COST ESTIMATES: NORTH ACCESS ROAD COST ESTIMATES

	Gravel	Paved
	80 miles	80 miles
NEPA Compliance (NPS estimates)	\$4,000,000	\$4,000,000
Route Plan, Survey and Design @ 9%	\$6,840,000	\$7,830,000
Construction Contract	\$76,000,000	\$87,000,000
Contingencies	included above	included above
Contract Administration @ 15%	\$11,400,000	\$13,050,000
Construction Subtotal	\$87,400,000	\$100,050,000
Construction Cost per Mile	\$1,092,500	\$1,250,625
Ancillary Facilities	\$8,000,000 to \$15,000,000	\$8,000,000 to \$15,000,000

A new north access road would require some type of visitor facility at the western terminus and a rest-stop-type facility at some intermediate location. These facilities could add another \$8 million to \$15 million to the cost of a new north access route. Utility infrastructure costs have not been quantified and are not included in any of the cost estimates.

RAILROAD CONSTRUCTION FEASIBILITY AND COST ESTIMATESRAILROAD CONSTRUCTION FEASIBILITY AND COST ESTIMATES

Neither terrain nor topography would preclude construction of a railroad. The railroad would be about 86–95 miles long (the route being longer than a road because of the grade limitations required for a railroad). Respondents picked their own alignments, which resulted in the different route lengths.

The concept of a north access to the Wonder Lake/Kantishna area by rail is also not new. Additional access into the park by rail has been considered by NPS consultants within the last decade and periodically by various individuals and entities in the private sector. There is presently a proposal before the Department of the Interior for a privately funded, privately operated railroad from Healy to Wonder Lake roughly along the Stampede corridor.

Information regarding the feasibility and cost of a rail alternative is available from several sources, including the Alaska Railroad Corporation. This information was supplemented by earlier NPS studies, including the 1994 *Alternative Transportation Modes Feasibility Study* prepared by BRW, Inc. Representatives from Kantishna Holdings Inc. (KHI), the proponent of the privately funded, privately operated railroad, attended a number of the interagency work sessions and also provided information on cost and feasibility of their proposal.

As with a road, traffic volumes impact the cost of a rail facility. More trains require proportionally more rolling stock and more sidings to allow trains to pass each other. Both the Alaska Railroad Corporation and BRW assumed that two trains initially would be required. The Alaska Railroad developed one alternative that used the existing Denali Depot as a departure point and had the western terminus in Kantishna. The private rail alternative proposed by Kantishna Holdings Inc. would depart from a new depot in the vicinity of Healy and have a western terminus somewhere in the vicinity of Wonder Lake.

Cost estimates for a rail alternative are listed in table 2 and are in 1997 dollars. The total estimated route length varied by respondent. All three organizations used 15% of construction costs for route planning, survey, and design. Construction methods typical for Interior and Arctic Alaska were assumed to be adequate for a north access railroad. The Alaska Railroad Corporation (ARRC) assumed that the embankment gravel needs for construction would be met by a balanced cut-and-fill approach supplemented with gravel from local sources, including sources inside the park. The maintenance needs for gravel ballast would be met from sources outside the park. Both the BRW and Kantishna Holdings Inc. cost figures assume out-of-park sources for all gravel. The Alaska Railroad Corporation and Kantishna Holdings Inc. both believe that the use of innovative design features can lead to reduced borrow quantities for the railbed construction. According to National Park Service estimates, completing the necessary environmental studies and conducting NEPA compliance would add about \$4 million to project costs.

A new north access railroad would require some type of visitor facility at the western terminus and probably a rest-stop-type facility at some intermediate location. These facilities could add another \$8 million to \$15 million to the cost of a new north access route. The Kantishna Holdings Inc. proposal includes more than \$62 million in developments, including hotel/visitor center developments at each end. Utility infrastructure costs have not been quantified and are not included in any of the cost estimates except the estimate for the Kantishna Holdings Inc. hotel/visitor center/rail termination developments.

TABLE 2: NORTH ACCESS RAILROAD COST ESTIMATES: NORTH ACCESS RAILROAD COST ESTIMATES

	ARRC¹	KHI²	BRW³
Single Track Facility & Sidings	95 miles	90 miles	86 miles
NEPA Compliance (NPS estimate)	\$4,000,000	\$4,000,000	\$4,000,000
Route Plan, Survey, and Design (15%)	\$29,670,000	\$16,875,000	\$24,458,400
Contract Amount	\$197,800,000 ⁴	\$112,500,000 ⁵	\$163,065,000 ⁵
Contingencies (%)	included above	\$11,250,000 (10%)	\$26,088,960 (16%)
Contract Administration (%)	\$29,670,000 (15%)	\$12,375,000 (11%)	24,458,400 (15%)
Construction Subtotal	\$227,470,000	\$136,125,000	\$213,603,360
Construction Costs per Mile	\$2,394,421	\$1,512,500	\$2,483,760
Project Total	\$257,140,000	\$153,000,000	\$238,061,760
Rolling Stock (two trains)	\$20,850,000	\$ Unknown	\$24,900,000
Ancillary Facilities	\$8,000,000 to \$15,000,000	\$62,000,000	\$8,000,000 to \$15,000,000

1. ARRC response to feasibility study questions 10/16/96.
2. KHI "Draft Scoping Question Response" 12/5/96.
3. BRW *Alternative Modes Transportation Feasibility Study* May 1994 and feasibility study questions responses 8/95 and 7/96.
4. Assumes in-park sources for gravel.
5. Assumes out-of-park sources for gravel.

MAINTENANCE FEASIBILITY AND COST ESTIMATES

ADOT/PF maintenance of a road to Wonder Lake/Kantishna from the Healy area would likely be handled from Healy. Maintenance costs are highly dependent on the type of road surface. Both ADOT/PF and NPS experience shows that gravel roads have significantly higher per mile maintenance costs than paved roads. According to the Alaska Department of Transportation and Public Facilities, the ratio of maintenance costs per mile for gravel versus paved is about 4:1 for the Denali Highway, a nearby 135-mile state road with both gravel and paved components.

Depending on the level of service, the state Department of Transportation and Public Facilities estimates that a north access gravel road will require two to three people full-time for maintenance. Estimates for the maintenance and operation costs for a seasonal-use north access gravel road range from \$210,000 per year (\$2,625 per mile) for minimum maintenance to \$555,000 per year (\$6,937 per mile) for dust control and one pass with a grader per week (see table 3). The higher figure represents the probable level of maintenance a new north access gravel road would require. These projected costs do not include any reapplication of gravel to the driving surface. The initial application of calcium chloride for dust control would add about \$400,000 (\$5,000 per mile) to the construction costs. Maintenance costs on a seasonal-

use, paved road are estimated at \$120,000 to \$210,000 per year (\$1,500 to \$2,625 per mile). Providing year-round access to Kantishna on a paved road would require approximately \$600,000 per year (\$7,500 per mile) in maintenance (ADOT/PF 1996).

A north access railroad would require a depot at each end, with staff. According to the Alaska Railroad Corporation, track maintenance would require a five-person crew based in Healy and a smaller, two-person crew at the west end. Maintenance of the rolling stock could be handled in the ARRC shops in Anchorage. Seasonal maintenance of a north access railroad would be about \$300,000 (\$3,158 per mile), and the cost to maintain the system for year-round use would be \$700,000 (\$7,368 per mile) (pers. comm. from Tom Brooks, AARC, to Joe Durrenberger, National Park Service, 2/20/97). Maintenance costs for a north access railroad are summarized in table 3. The facilities at the western terminus would require power, water, and wastewater utility infrastructure as well. For a seasonal operation, the Alaska Railroad Corporation has suggested that small, rail-mounted package plants might be able to accommodate the utility needs of a modest development. Regardless of the method of treatment, a water source and treated wastewater discharge area is still assumed to be necessary.

No effort was made to quantify the administrative costs of a north access road, such as visitor assistance or emergency services, or the maintenance and operation costs of any visitor-related facilities and infrastructure.

TABLE 3: NORTH ACCESS ROAD AND RAILROAD ROUTE MAINTENANCE COST ESTIMATES: NORTH ACCESS ROAD AND RAILROAD ROUTE MAINTENANCE COST ESTIMATES

Gravel Road (80 miles) Seasonal-Use	ANNUAL COST	ANNUAL COST PER MILE
Minimum maintenance level (two—three bladings per month)	\$210,000	\$2,625
Probable maintenance level (dust control and one blading per week)	\$555,000	\$6,937
Paved Road (80 miles)	ANNUAL COST	ANNUAL COST PER MILE
Seasonal-Use Road	\$120,000 — \$210,000	\$1,500 — \$2,625
Year-Round Use Road	\$600,000	\$7,500
Railroad (95 miles)	ANNUAL COST	ANNUAL COST PER MILE
Seasonal-Use Railroad	\$300,000	\$3,158
Year-Round Use Railroad	\$700,000	\$7,368

ROUTE FUNCTION AND DESTINATIONROUTE FUNCTION AND DESTINATION

Except for landowner access and service vehicles traveling to Kantishna businesses or park facilities,

nearly all traffic on a new north access road likely would be associated with tourism and recreation. Visitors and Alaska residents alike want to visit the park and enjoy its resources, and a north access road would provide people with a greater opportunity to visit the park's interior, including the possibility of close proximity views of Mt. McKinley. A north access railroad offers many of the same benefits as a road, albeit with less flexibility and most likely greater cost to the user. A railroad has certain NPS management advantages over a road in terms of directing use and controlling visitor-related activities with potential impacts on park resources.

A new north access road would provide a quicker means of road access for the Kantishna landowners and businesses. A north access railroad could transport many visitors and guests to the Wonder Lake area and to Kantishna businesses. None of the businesses queried felt a railroad would meet their entire access needs, and several businesses indicated that neither a new north access road nor a railroad would be a substitute for their current use of the existing park road because the trip on the existing park road is an integral part of the experience they offer. A new north access that stopped short of the Wonder Lake/Kantishna area would not provide access to Kantishna for landowners and businesses.

If demand warranted, a new north access route, like the current park road, could be maintained to provide year-round access to Kantishna. As mentioned previously, maintenance costs would vary depending on whether access was by road or by rail, but either could be maintained for use in the winter. It would be cheaper to maintain year-round road access to Kantishna via a new north access road than via the existing park road.

A new north access, either road or rail, that connects to the existing park road would create a transportation loop between the park's frontcountry and Wonder Lake. The loop concept, with a second access route into the park, has been suggested as a way to double the visitation on the park road without a net increase in traffic. However, traffic patterns on the park road are more complex than this concept suggests. Most visitors take shorter trips into the park, and most vehicles on the park road turn around at intermediate destinations well short of Wonder Lake. Whether the operation of portions of the park shuttle or concessioner bus systems on a loop basis would meet the needs of park visitors has not been investigated; however, it is possible that, for some trips, this would be an improvement over two-way travel on the park road. Whether or how a loop might be used should be considered as part of a possible future analysis of feasibility. No analysis has been done to determine if a loop transportation system could be established without compromising the current park road experience.

A cornerstone of the National Park Service's management philosophy at Denali National Park and Preserve, as outlined in the enabling legislation, is the concept of providing visitor opportunities at levels that protect the resource and offer an experience oriented toward a wilderness setting. This concept is implemented on the park road in the form of a cap on the number of vehicles allowed during the summer visitor season. Current traffic levels on the park road are at the cap now, and the visitor transportation systems beyond Primrose (mile 17) are operating near capacity. The recent focus of road management has been on the redistribution of traffic within the 1986 *General Management Plan* limits. The goal is to accommodate increased visitation by increasing the numbers of vehicles carrying visitors with a corresponding reduction in other types of traffic. A new north access route would not result in a reduction in traffic numbers on the park road during the peak visitor season. Visitation to the state and to Denali National Park and Preserve is expected to grow, and the demand for the current park road experience will not diminish. Administrative and services-related traffic may reroute to the north access road, which would mean that the visitor transportation systems could be expanded within the cap to replace this amount of rerouted traffic. Whether by road or by rail, a new north access route would

provide a different experience than that offered on the existing park road and would increase the overall capacity of the park.

The National Park Service has recognized that there is a demand for improved access into Denali to accommodate increasing visitation and provide quality visitor experiences. In an effort to increase opportunities for visitors, the National Park Service recently completed two studies. The *Revised Draft Development Concept Plan / Environmental Impact Statement, South Side Denali* (NPS 1996b) includes an upgrade and extension of an existing state road on the south side, with visitor facilities, to provide for close proximity views of Mt. McKinley. The *Entrance Area and Road Corridor Development Concept Plan* (NPS 1996a) calls for increased visitor facilities in the park's frontcountry and along the park road.

Close proximity views of Mt. McKinley are a goal desired by the visiting public and the tourism industry alike. Kantishna Holdings Inc., the proponent of a privately funded and operated rail venture, has stated that a destination hotel/visitor center facility with a view of Wonder Lake and Mt. McKinley is an integral and essential part of their proposal. The first location along the Stampede corridor that could provide a close proximity view is in the vicinity of Myrtle Pass, 15 miles short of a connection with the park road near Wonder Lake. There do not appear to be any other locations along the corridor, before Myrtle Pass, that provide this opportunity, although more distant views of Mt. McKinley are available, weather permitting, from a number of locations. A new north access road along the Stampede corridor that stopped short of Myrtle Pass could possibly see steady use by visitors and residents alike. Such an intermediate development would provide easier access to the state lands along the first 30 miles for recreation and hunting. It is unlikely that a new north access railroad that stopped short of Myrtle Pass would have sufficient demand to justify its construction. Any new north access route would further the goal of the state's Division of Tourism — to spread visitor use by providing more opportunities to visit different places in the state. Additional evaluation is needed to determine how a new north access fits in a statewide strategy to accomplish this goal.

A new north access route that would be operated and maintained only in the summer could be adaptively used during the off-season. Either a road or a railbed could provide easier traveling for winter visitors on skis or snowshoes or via dogsled or snowmachine en route to Kantishna, with a roadbed providing easier travel to a broader spectrum of users.

USER DEMAND

Visitor Use Projections

The state's Division of Tourism collects data about visitation to Alaska and periodically investigates visitor use patterns within the state through their Alaska Visitor Statistics Program (AVSP). Nonresidents make up the largest component of tourists in the state and at Denali. Analysis of the 1995 AVSP data indicates that vacation/pleasure visitors make up the largest component (62%) of the nonresident visitor population to the state. More than half of the nonresident vacation/pleasure visitors to the state (58% in 1993 according to AVSP data) are on a package tour. In summer 1993 (the last year for which detailed information was collected under the program), Denali/McKinley was visited by about 43% of the nonresident vacation/pleasure visitors. Vacation/pleasure visitors also represent the fastest growing segment of the nonresident visitor population (a 63% increase from 1989 to 1995). Cruise ship arrivals and domestic air arrivals (the two primary means of transport for package tourists) had the largest volumes and registered the highest growth rates for nonresident vacation/pleasure visitors. Thus, projections of visitation to the state as a whole and to Denali based on the growth rate for the package

tour industry, which is the largest and fastest growing segment of the tourism industry, should represent the upper limit of projections of future visitation. Such projections have been performed by the Kelsh Company under contract to the Alaska Visitor's Association and by Reed Hansen & Associates under contract to the National Park Service. The Kelsh projections are equivalent to a compound growth rate of 4.6% per year. Hansen used this rate through the year 2000 based on planned increases in the cruise ship industry and then assumed a more conservative rate of 3.4% per year for the next 15 years. These uppermost growth rate projections indicate that visitation to the state and to Denali will double sometime between the year 2010 and 2014 (extrapolated from Reed Hansen & Associates 1997).

The nature of Denali National Park and Preserve and the variety of ways people enjoy it make collecting park visitation data difficult. Distinguishing between visits (defined as each day a visitor enters the park) and visitors (the number of people coming to the park regardless of the number of times they reenter the park) is the first hurdle, because most visitors stay outside the park and visit the park more than once during their stay in the area. However, it is possible to arrive at an approximation of the numbers of visitors to the park per year. In summer 1993 (the last year for which detailed AVSP information was collected), about 36% of all nonresident visitors, regardless of trip purpose, visited Denali/McKinley. Applying this statistic to the summer 1995 AVSP visitation data (967,100 visitors statewide, May through September) results in a nonresident visitation to Denali of about 348,000 people in 1995. According to NPS information, slightly more than 341,000 visitors made more than 540,000 recreational visits to Denali in 1996 (NPS visitor statistics, Denali National Park). **As stated previously, this type of data analysis gives only approximations of the visitation level. Therefore, these numbers should be considered as representative of the visitation level rather than a measure of actual visitation.** At annual growth rates of 3.4% to 4.6%, visitation to the north side of the park could double in 14 to 18 years. It should be noted that this projection does not take into account that new visitor facilities and services are already planned for the south side of Denali National Park and Preserve, Seward and Kenai Fjords National Park, and Wrangell-St. Elias National Park and Preserve. The development package for the south side of the park includes road improvements, visitor centers, campgrounds, and highway waysides and is expected to serve about 240,000 visitors per year. While this study acknowledges the potential for these other visitor destinations to attract visitors who would otherwise come to the north side of Denali, no visitation assumptions are made in this study to account for this.

Expanded availability of existing visitor activities in Denali and the addition of new facilities might affect the use of a new north access. The National Park Service has proposed, in the *Entrance Area and Road Corridor Development Concept Plan*, a series of administrative changes that would allow increased visitation to the park's interior. The plan also calls for new and expanded visitor facilities in the frontcountry and along the road corridor.

Although there is not a lot of information about the recreational use patterns of Alaska's residents, it is unlikely that, compared to nonresident tourism, Alaska residents will have a significant effect on visitation to Denali. The Alaska Department of Labor estimated the combined population of the two major metropolitan areas (Anchorage/Mat-Su Region and the Interior Region) at 408,403 persons in 1995. Some fraction of this population visits Denali each year, and those people affect the actual visitation numbers for any given year. However, at a projected growth rate of 2.3% for the state's population, growth in overall Denali visitation by residents is likely to be less than nonresident visitation growth; thus resident visitation does not affect visitation forecasts significantly (Reed Hansen & Associates 1997).

Road Traffic Forecasts

The Alaska Department of Transportation and Public Facilities estimated an initial average daily traffic volume of 1,100 (550 vehicles travelling round-trip) on a north access road. Assuming a minimum ridership of three people per vehicle and 550 vehicles per day would result in a minimum of 1,650 people per day, or 247,500 people over a five-month (May-September) season using a north access road. Again, most visitors to the Denali area visit the park more than once during their stay, and the numbers above would represent visits, not necessarily additional visitors. This analysis does not have an allowance for buses or other forms of mass transit. The number of people using a north access road would be greater depending on the percentage of vehicles that were buses. Certainly the package tour industry would investigate using buses on a north access road.

The package tourists are looking for the same wildlife and scenic beauty that all visitors to Alaska seek. The difference involves a desire to ensure a level of comfort and predictability in terms of transportation and accommodations. The package tour industry's use of a north access road would depend on the availability of this experience and the possibility of close proximity views of Mt. McKinley. The benefits to the package tour industry of a north access road might diminish if other opportunities for a similar experience develop (such as the proposed south side development at Tokositna) that possibly involve less time or lower cost. For visitors with their own transportation, a north access road would provide another choice from many other park experiences of comparable cost and commitment, such as dayhikes in the frontcountry or attending interpretive programs.

Rail Traffic Forecasts

At a possible ticket price of \$100 (1996 dollars) or more, a trip on a north access railroad is comparable in cost and commitment to only two other park experiences — a bus trip to Wonder Lake in the park (\$26-\$99) and a flightseeing tour (\$100-\$150+). According to NPS data for 1996, slightly more than 202,000 of the approximately 341,000 visitors to the park traveled on a bus into the park west of Primrose (mile 17). An additional 60,000 visitors traveled on the Natural History Tour to Primrose. Given that the visitor transportation systems other than this Natural History Tour (the park shuttle and the concessioner's Wildlife Tour) are operating near capacity, it is reasonable to assume that there is today at least some demand for an experience similar to that offered by a north access railroad to Wonder Lake/Kantishna. It is also reasonable to assume that some fraction of the visitors on a bus trip would have chosen to ride on a train had the option been available.

Ridership is affected by cost. In 1996 a trip to Wonder Lake on a park shuttle bus cost \$26; a narrated wildlife tour to Toklat (with a box lunch) cost \$54, and a day trip provided by a Kantishna business cost \$99. Kantishna Holdings Inc., the Alaska Railroad Corporation, and Reed Hansen & Associates all agree that a ticket price of \$100 (1996) for a north access rail trip is about the maximum the market will bear. Available time for a trip into the park is another factor that influences the decision whether to take such a trip and which trip to take. Visitors on package tours (69% of all nonresident vacation/pleasure visitors to the park are on some kind of a package tour) generally have tighter schedules with less time and take shorter trips into the park. Less than 5% of the visitors currently travel to Wonder Lake (NPS 1996 road use statistics). However, as long as a variety of trip lengths remain available and a trip into the park remains cheaper than the cost of the train, it is likely that the transportation systems on the existing park road will continue to operate at capacity. Kantishna Holdings Inc. projects an annual ridership of 525,000, with 250,000 to 275,000 passengers over a 100-day summer season. Given that more visitors

come to the park than use the bus systems today and that visitation to the park is projected to double in the next 14 to 18 years, a potential ridership equal to the KHI projections for the summer season will occur sometime in the next several decades. Convincing these visitors to pay \$100 to ride a train represents a marketing challenge.

Off-Season Use

Most visitation to Alaska occurs in the summer, with only 5% of nonresident vacation/pleasure visitors arriving in the off-season. Estimating potential shoulder season and winter use of a new north access route is also difficult. The amount and type of use would depend on whether the access is open and maintained year-round. The decision to provide and maintain year-round access would depend on demand and maintenance costs. A seasonally open north access road would likely be used by residents and visitors alike as early in the spring as it would be opened. If the road were open as early as March, uses would include seeing Mt. McKinley as well as access for the typical springtime activities of skiing, dog mushing, and snowmachining. Shoulder season use of a north access road in the fall would probably focus on sightseeing and access to the state lands along the first 30 miles for hunting. Off-season use of a north access railroad would likely be the same as during the summer — sightseeing and access to lodges and businesses at the western terminus or in Kantishna. A seasonal-use road or railroad would likely increase winter use of the area by residents traveling by skis, dogsled, or snowmachine to Kantishna because the route would bypass the more difficult sections of the typical winter route.

According to the Division of Tourism AVSP data for 1995, 92,200 nonresident visitors to the state during the 1994–95 fall/winter period listed pleasure as one component of their visit. Of this number, only 28,600 visitors were in Alaska specifically for vacation/pleasure purposes (5% of all vacation/pleasure visitors for the year); the balance were either visiting friends and relatives or on combination business/pleasure trips. The growth rate for off-season vacation/pleasure visitation (31% over six years) is about half that of summer recreation visitation. Based on this data, it is unlikely that a north access route, whether by road or by rail, would have much use by nonresidents during the winter without a major marketing effort — although Kantishna Holdings Inc. projects an off-season ridership of 250,000 once all the facilities and marketing mechanisms are in place. Currently, the Alaska Railroad Corporation offers weekly passenger service between Anchorage and Fairbanks and to the park in the winter. This train consists of one passenger car and one baggage car. Thus, winter use of any new north access route by nonresidents would probably be minimal without a major marketing effort and a large increase in winter visitation to the state.

USER COSTS AND CAPITAL RECOVERY

Whether funded from public or private sources, the construction of a new north access road or railroad would represent a substantial investment. The recovery of capital costs through user fees is allowed, although generally not done, for a road constructed with public funds. The same applies for a railroad constructed with public monies. However, this is not the case for a private venture.

Kantishna Holdings Inc. has proposed to construct and operate a railroad from the Dry Creek area near Healy to the vicinity of Wonder Lake using private capital. The company's proposal includes, and is dependent on, the development of a hotel/visitor center complex at the east end and the development of a destination hotel/visitor center complex at the west end on park lands with a view of Wonder Lake and

Mt. McKinley. Kantishna Holdings Inc. estimates that these developments and the construction of the railroad will cost at least \$185 million, not including route planning, facility design, and construction contract administration. Once all facility developments and marketing mechanisms are operational, Kantishna Holdings Inc. projects a year-round ridership of 525,000 people at a ticket price of no more than \$100 (1996 dollars). The economic feasibility of the proposal depends on revenues from the two hotel/visitor center complexes and the railroad. All facility and ticket revenues would be combined to amortize the cost of railway development, facilities development, system operation, maintenance, and lease fees.

Reed Hansen & Associates, under contract with the National Park Service, performed a cost recovery analysis for a privately funded railroad using ticket sales only for revenue (Reed Hansen & Associates 1997). Currently, Denali is visited by about 350,000 people, 260,000 of whom used some form of bus transportation to go into the park. Nearly all visitation to the park occurs during a 120 day period in the summer. Reed Hansen and others project visitation to Denali to double in 14 to 18 years. A 90% occupancy rate in one 10-car train per day for a six-month season provides a ridership of 102,168 people per year. Ridership was assumed to double after five years of operation and to triple after another five years. These figures are within the uppermost growth projections for visitation to the park, however they do imply that most visitors to Denali who did not take a bus trip into the park would use the north access railroad. Table 4 shows ticket price versus internal rate of return to investors for two levels of initial investment with a capital recovery period of 20 years plus the time of construction.

TABLE 4: NORTH ACCESS RAILROAD ESTIMATED FARE PRICE VERSUS RATE OF RETURN: NORTH ACCESS RAILROAD ESTIMATED FARE PRICE VERSUS RATE OF RETURN

Capital Costs	Fare	Internal Rate of Return
\$132,700,000 ^a	\$100	9%
	\$155	15%
\$212,000,000 ^a	\$100	5%
	\$150	9%
	\$235	15%

a. Capital cost figures are from 1997 Reed Hansen report.

VISITOR EXPERIENCEVISITOR EXPERIENCE

The primary focus of most visitors to Denali is to see Mt. McKinley and to observe free-ranging wildlife in a wilderness setting.

The Stampede corridor traverses the northern foothills of the Alaska Range. Views along the first 50 miles of the route consist of a treeless tundra plain with low mountains in the distance. Weather permitting, this portion of the route provides more opportunities for distant views of Mt. McKinley than are available along the existing park road. Unlike other highways in the region, there are no distant views of other snowcapped peaks or glacier-covered mountains along this route. Lower population densities,

habitat differences, and seasonal use patterns combine to make opportunities to see wildlife less than along the existing park road, particularly for the first 50 miles of the route.

The terrain and scenery change in the second portion of the route. The broad vistas are replaced by rolling hills covered with spruce. The possibility of seeing caribou, moose, or bears is greater in the last 30 miles. Dall sheep are virtually nonexistent along the route because of the lack of habitat. Occasional glimpses of Mt. McKinley hint at the views to come. At Myrtle Pass, about 65 miles from the route's beginning, is the first opportunity for close proximity views of Mt. McKinley along the route. In terms of proximity, this view (37 miles from the mountain) is somewhere between the south side view from the state's Denali View pullout at milepost 130 on the George Parks Highway (42 miles from the mountain) and the view from the Eielson Visitor Center (34 miles from the mountain) on the park road. Close proximity views are available for the next 10 miles and then again from the park road at the north end of Wonder Lake, (about 30 miles from the mountain).

However, viewing opportunities translate into views only when the weather cooperates. Mt. McKinley visibility data is collected at the Eielson Visitor Center during normal business hours in the summer. From 1992 to 1996 the mountain was clear 11% of the time and partially clear another 47%, meaning that for a total of 58% of the time at least part of the mountain was visible (NPS 1997). Although no visibility data was found for the north side, it is expected that the frequency that the mountain would be visible from the north access route would be similar to visibility from Eielson Visitor Center. The Eielson Visitor Center visibility data does address the potential for seeing Mt. McKinley at other times of the day or other times of the year.

SOCIOECONOMIC CONSIDERATIONS2SOCIOECONOMIC CONSIDERATIONS

An analysis of the social and economic benefits and costs of a new north access route to the local area and the state has not been done. This type of analysis would allow evaluation of such a development in a regional and statewide context. Conducting a socioeconomic analysis should be one of the first tasks performed in any future work on a new north access route.

LAND STATUSLAND STATUSLAND STATUSLAND STATUS

The 80-mile Stampede corridor is primarily a mixture of state and federal lands. From the George Parks Highway to the Moose Creek bridge in Kantishna, about 27 miles of the corridor is state land and 54 miles is park land (see Study Area map). Within the park, there are two small homesites near the Stampede Mine, a number of unpatented placer claims primarily centered on the streambed in the upper Moose Creek drainage and its tributaries, and 73 acres of patented land in Spruce and Rainy Creeks (see Detail: Kantishna/Myrtle Pass map). The route would not need to cross any private land in the park. There are scattered private parcels in the first 12 miles of state land, from the Parks Highway to Fish Creek, in addition to the Panguingue Creek subdivision, a 160-lot subdivision that contains about 80 households. The road through the subdivision, originally part of the 1960s pioneer road, is on an ADOT/PF right-of-way that ranges from 100 to 150 feet wide. No decision has been made that a new north access route would use this right-of-way.

Detail: Kantishna/Myrtle PassDetail: Kantishna/Myrtle Pass map

All of the state land in the corridor west of the Panguingue Creek subdivision is designated as Subregion 4E by the 1991 update of the *Tanana Basin Area Plan* (Alaska DNR 1991). The plan directs that the state lands in that unit be retained in public ownership for multiple use management, with public recreation and wildlife habitat as the primary surface uses. Land disposals are prohibited in the subregion, but material sales, leases, and permits that are not specifically prohibited may be allowed. The state lands between the subdivision and the Parks Highway are also designated for multiple use, with the same primary surface uses, although a large, long-term grazing lease covers much of this land. Most of the state land from the Parks Highway to the 8-Mile Lake area has been selected by the Denali Borough as part of its 50,000-acre entitlement. Most of the land south of Dry Creek is in private ownership, including ownership by the Alaska Railroad Corporation.

MANAGEMENT HISTORYMANAGEMENT HISTORY

The intent of this study is to provide an objective analysis of the feasibility of constructing a new north access into Denali National Park and Preserve. Unlike other documents, such as the ones listed below, this study does not contain recommendations, nor is it a decision document. It only addresses the issue of whether a new north access can be done, not the issue of whether it should be done. That analysis involves another process, with public involvement, that results in decisions that provide management direction. The northern part of the park, including the Stampede corridor, is managed by the National Park Service as part of an intact, largely undisturbed ecosystem. The park lands west of the Sushana River are part of the 1980 ANILCA additions to the park. These lands were added to the park with the specific intent of preserving, as part of the national park system, an intact northern ecosystem. The following is a history of actions affecting the management of the study area.

1917 — Mt. McKinley National Park was established as a game refuge.

1922 and 1932 — Congress expanded the park to provide additional protection for wildlife populations.

1971 — Congress withdrew lands along the north side of the park from land selection under section 17(d) 2 of the Alaska Native Claims Settlement Act.

1973 — The park's *Master Plan* established a twofold approach to managing the park — preserving scenic and geologic features on the south side of the Alaska Range with allowance for greater levels of public use and recreation, and establishing the existing park road as an interpretive corridor with primary visitor access by mass transit.

1974 — The *Final Environmental Impact Statement, Mount McKinley National Park Additions, Alaska* reiterated the twofold approach to management and added that the lands around Kantishna were needed to prevent large-scale development in the center of the proposed park additions.

1980 — Congress, through the Alaska National Interest Lands Conservation Act, added a large area on the north side to provide protection for an intact ecosystem. The legislation reiterated the vision of the 1974 *Environmental Impact Statement*.

1986 — The park's *General Management Plan* reconfirmed the position of managing the existing road corridor to provide recreation opportunities in a wilderness setting and accommodating increased visitation by developing the south side. A new north access was determined to be unnecessary to meet either visitor or Kantishna inholder access needs.

1988 — The *Draft Wilderness Recommendation Environmental Impact Statement* recommended wilderness status for most of the park lands along the corridor with the exception of an exclusion around the Stampede Mine and the Kantishna area including the Moose Creek drainage.

1990 — The Record of Decision for the *Final Environmental Impact Statement, Cumulative Impacts of Mining, Denali National Park and Preserve* was to buy out the mining claims in Kantishna, which diminished the need for a new north access route.

1991—1993 — Congress appropriated a total of \$12 million to buy out Kantishna mining claims.

1994 — The *Alternative Transportation Modes Feasibility Study* investigated ways to improve access into the park. The study pointed out that larger buses and an improved reservation system were the most cost-effective means to increase access into the park.

1994 — The Denali Task Force of the National Park System Advisory Board was formed to review and make recommendations on several park issues, including the suitability of alternative transportation systems. The task force was divided on the issue of access, and the advisory board itself added an amendment to the task force report endorsing a new northern railroad route, contingent on prior stakeholder agreements on the extent and nature of development in the immediate Wonder Lake area.

1996 — The *Entrance Area and Road Corridor Development Concept Plan / Environmental Impact Statement* continued the direction to limit large-scale growth in the Wonder Lake/Kantishna area and provided for improved access and opportunities along the existing road corridor.

1996 — The *Revised Draft Development Concept Plan / Environmental Impact Statement, South Side, Denali National Park and Preserve* proposed several new facilities on the south side of the park. These included an access road to new visitor facilities with an opportunity for close proximity views of Mt. McKinley.

The National Park Service manages the north side of the park to provide wilderness recreational opportunities within an intact ecosystem that includes limited development. There is also a recognition that a visit to Denali is a unique and special experience that more visitors wish to enjoy. The recently completed *Entrance Area and Road Corridor Plan* and *South Side Denali Development Concept Plan* include developments that will provide for expanded opportunities for visitors in and around the park.

IMPLEMENTATION PROCESS AND ENVIRONMENTAL REVIEW

The steps outlined below describe a planning process that would be followed by the National Park Service and the state of Alaska if the decision were made to further consider establishing a new road or railroad into Denali National Park and Preserve for visitor access. As shown in the following flowchart, each step would include public input and serve as a decision point, and the results would help support studies and planning in subsequent phases. The costs and timeframes are estimates only, and the actual process could require more time and greater cost.

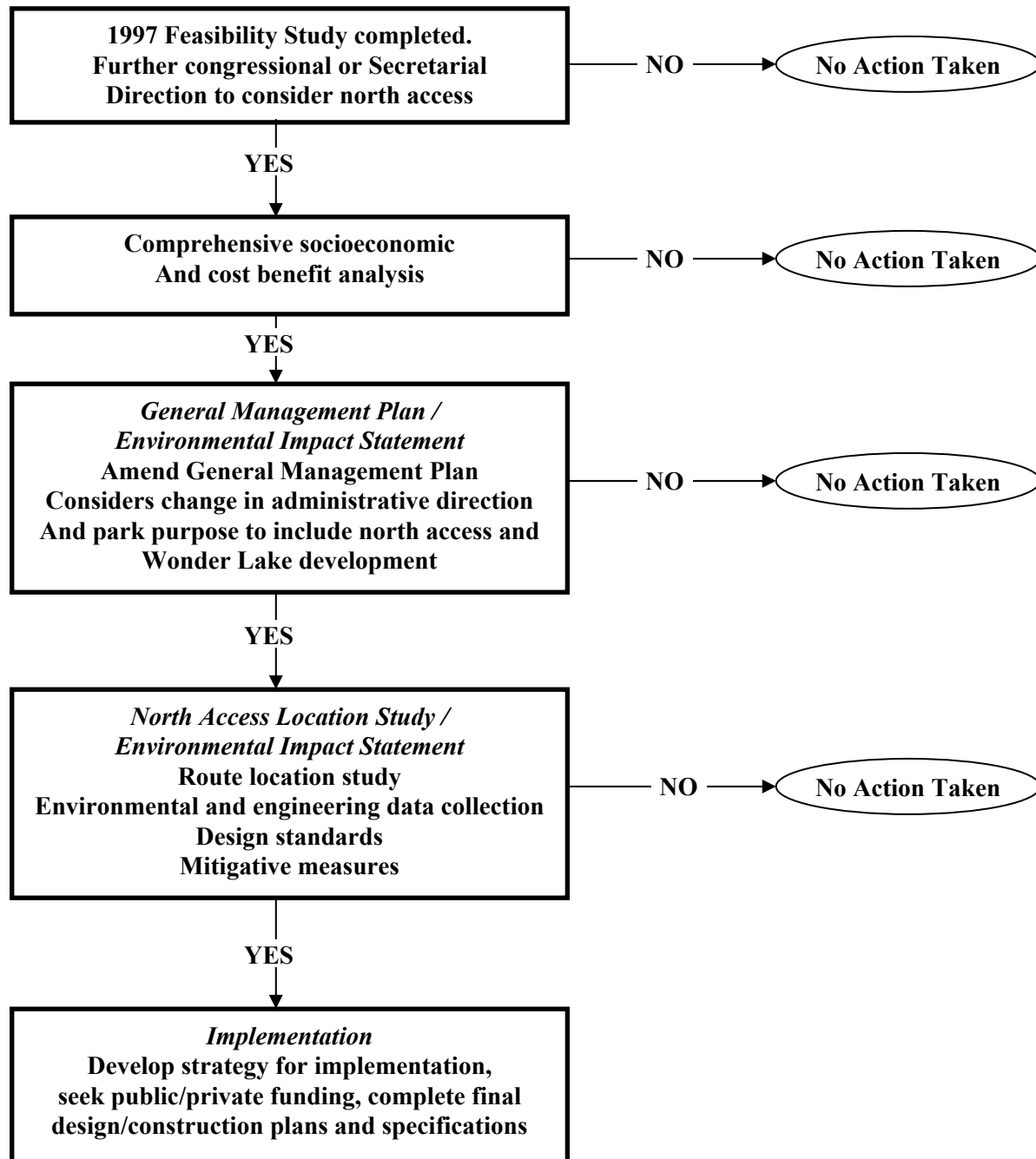
Following consideration of this 1997 feasibility study, a decision will be made by Congress or the secretary of the interior on whether or not to proceed. Should a decision be made to proceed, additional scoping and evaluation should be undertaken. It became apparent during the study that major information gaps exist for socioeconomic effects and cost/benefit analysis. Additional information on economic aspects, particularly cost of ancillary facilities, is available, but not within the timeframe and resources of this feasibility study. Filling these gaps should be the first step and would allow evaluation of a new north access route in a regional and statewide context and ensure that the development would provide the greatest benefit to the broadest possible audience. It would more clearly identify all costs for a new north access route, not just construction costs of the road or railroad. Operational costs, how they could be met, and their impacts on state and federal agencies should be more clearly defined. A more complete determination of demand, by user group, would allow better definition of a specific proposal. This next phase would also be a cooperative effort with the state and would require about one year and \$150,000 to complete. The additional socioeconomic information generated, plus this report, would provide the basis for a decision on what the next step should be and when it should be taken.

Should the next phase of study result in a decision to proceed with a north access project, an amendment to the park's *General Management Plan* would be undertaken to include a new north access route into the park and additional development in the Wonder Lake area. An amendment to the *General Management Plan* would be needed because these proposals would represent a major change in the management emphasis and legislative intent for a key area of the park. Amending the *General Management Plan* for a project this significant would require detailed scoping, extensive public involvement, thorough evaluation of alternatives, and an environmental impact statement. The environmental impact statement would be required because of the significance of the action, the potential for major environmental effects, and the anticipated public controversy. The amendment would determine if a new north access is needed, whether the access would be by road or by rail, and what support facilities would be necessary and appropriate. The amendment would also include a study phase to gather necessary environmental data (identified in the appendix). Amending the *General Management Plan* would take two to three years, depending on public controversy, and cost about \$250,000 per year.

Following an amendment to the *General Management Plan*, a project-specific location study / environmental impact statement would be undertaken to evaluate specific potential alignments and identify specific support development needs within the new northern access corridor. Additional environmental and engineering studies would be necessary to provide information specific to the route and for design. It would be a cooperative effort between the state and the National Park Service. The location study / environmental impact statement would identify a preferred alignment, specific mitigation measures, details on support development and locations, and public/private financing strategies. This study would require up to five years and cost an estimated \$3 million.

Once the location study / environmental impact statement is complete and funding is obtained, an implementation strategy would be developed and the project would move into detailed design and construction. Costs for design would depend on the final alternative chosen and are discussed in earlier sections of this report. Design would likely take at least one year, and construction would probably take another two or more years depending on specific contracting strategies.

IMPLEMENTATION PROCESS FLOWCHART



The implementation process could cost \$4-\$5 million and require 8-9 years. These costs and timeframes are estimates only.

APPENDIX: ENVIRONMENTAL STUDY NEEDS

The legislative language calling for the Denali *North Access Route Feasibility Study* requires that the study ensure that resource impacts from any north access route plan be evaluated with accurate information and meet the potential needs for compliance with the National Environmental Policy Act (NEPA). This appendix evaluates the current resource information base for the north access corridor. It provides a brief summary of existing resources along the potential route, identifies data sources, and evaluates the adequacy of the existing database for performing a NEPA analysis should an environmental impact statement be written. Additional data needs are recommended by resource topic where the existing database is deemed insufficient to perform a credible analysis.

This appendix is divided into physical resources (air and water quality), biological resources (vegetation, wetlands, fisheries, birds, caribou, moose, wolf, and bear), and sociocultural resources (visitor-use activities, cultural resources, and subsistence).

PHYSICAL RESOURCES

Air Quality. Denali National Park and Preserve is a designated class I airshed. Air quality in the park is generally very good, and no cases of national ambient air quality standards (NAAQS) exceedance have been documented. The park participates in three national sampling programs: The National Atmospheric Deposition Program, which monitors acid precipitation; an NPS ozone monitoring program; and the Interagency Monitoring of Protected Visual Environments Program, which measures particulates.

Data Needs: Data from the three existing sampling programs would probably be adequate for NEPA purposes. However, some air quality sampling specific to the corridor may be desirable.

Water Quality. Water quality investigations in the potential road/railroad corridor have been primarily associated with placer mining disturbance in the Kantishna Hills area. Generally water quality data is lacking for streams crossing the Stampede corridor. Mining in the Kantishna Hills region has caused increased turbidity and suspended sediments, as well as heavy metal contaminations. Stream channels have also been straightened and relocated, resulting in streambed erosion. Improvements in water quality are associated with the decline of mining activity in recent years.

In 1995 the NPS Water Resources Division completed a comprehensive review and inventory of water quality baseline data for the park (NPS 1995). Water quality monitoring stations along the corridor route were primarily in the Kantishna area and along Myrtle Creek and the Clearwater Fork. Water quality monitoring has occurred at only one site along the Stampede corridor. More recently, Edwards and Tranel (1995) monitored water quality and chemistry in the Kantishna area at the western end of the corridor.

Deschu (1986) provided a summary of the information available on water resources in the Kantishna Hills. Areas of investigation included riparian and stream habitat (Nielsen 1984), stream hydrology and channel characteristics (Solin and Harrold 1984 and NPS 1981), general water quality (May 1979 and NPS 1981), heavy metal concentrations (West 1982; West and Deschu 1984), stream chemistry (Deschu and Kavanagh 1983), turbidity and solids (Deschu 1984), arsenic concentrations (Deschu 1985), and aquatic invertebrates (Oswood et al. 1985 and Brown and Oswood 1985).

Data Needs: Baseline water quality and chemistry data should be collected for streams crossed or water bodies rendered accessible by the potential road/railroad corridor. Existing water quality information for water resources in the Kantishna Hills area should be adequate for NEPA evaluations.

BIOLOGICAL RESOURCES

Wetlands. Wetland inventory mapping that has taken place to date in the Denali area is primarily along the Parks Highway corridor and adjacent to the north boundary of the park. Generally, no wetland information exists for the potential road/railroad corridor except for limited field investigations in the Kantishna Hills where the emphasis was on riparian areas that had been disturbed by mining. Delineation of wetlands beyond floodplains is nonexistent and within floodplains is very limited. The presence of wetlands could influence the alignment of a new north access and have been considered in estimates of the project time and cost.

Data Needs: Wetlands inventory mapping would be needed along the entire corridor.

Fisheries. Based on a preliminary evaluation of the transportation corridor, at least 17 streams cross the corridor. Most of the drainages along the corridor have never been inventoried for fisheries resources with the exception of the streams in the Kantishna area (Miller 1981 and Meyer and Kavanagh 1983). Alaska Department of Fish and Game salmon surveys provide information on some streams traversing the corridor.

Miller (1981) surveyed streams along the Denali park road, which included some work in the Kantishna area. The survey focused on determining the fish species present. Small portions of four streams in the Kantishna area were surveyed. Grayling and sculpins were reported in all streams, and king salmon fry in three streams. Meyer and Kavanagh (1983) surveyed 34 Kantishna Hills streams and tributaries in 1982. Data included species composition, size and age structure, seasonal and spatial distribution, and relative abundance of fishes. Five species were found in the Kantishna Hills streams — arctic grayling, slimy sculpin, round whitefish, and king and chum salmon.

Data Needs: A field reconnaissance of all streams crossed by the north access corridor should be conducted. A field survey of all potential stream crossings should be completed to identify the fish species composition, relative abundance, and life history usage (e.g., migration, spawning, and rearing). Resident and anadromous fish spawning areas near the corridor should be identified, and an analysis of the potential impacts from gravel extraction in the floodplain should be performed.

Birds (Raptors and Ground-nesting Birds). The Denali raptor nest project has collected baseline information on the breeding biology of golden eagles and other raptors in the eastern portion of the park. This study area includes a portion of the north access transportation corridor from the Toklat River to Kantishna. McIntyre (1989) recommended aerial and ground surveys be conducted in the Kantishna Hills. There is a general lack of data concerning ground-nesting birds along the potential transportation corridor.

Data Needs: Baseline information on ground-nesting birds and raptor breeding biology (nest structures and breeding areas) should be collected along the corridor.

Caribou. The Stampede Trail area is currently and has historically been a calving and important wintering area for the Denali caribou herd, which currently numbers about 2,200. The most important caribou calving areas are south of the park road. Caribou have typically calved in rolling hills or flats along the Sushana/lower Toklat area, Stony Creek, and Moose Creek (Singer 1986a), which are along the corridor route. Calving typically occurs in the lowest areas first (at Sushana and Stony) and moves to the Moose Creek area and Turtle Hill (south of study corridor). Caribou calving has also occurred on state lands near the end of the Stampede Trail (Alaska DNR 1991). Summer range includes mostly alpine-tundra-dominated mountain slopes both south of the Alaska Range (Cantwell area) and on the north side of the Alaska Range from the Teklanika River west to the Clearwater River. These areas are south of the corridor route. Rutting habitat in September–October is typically at mid-elevations in open tussock and shrub tundra in the Turtle Hill, Moose Creek, and Stony Creek areas. Historically, caribou have wintered along and adjacent to the corridor from the lower Savage River to lower Toklat River area and in the Kantishna Hills (Singer 1986a).

During the summer season, chances to see caribou would be limited because caribou disperse to summer ranges south of the Denali park road. Viewing opportunities would be the highest in the winter months, when caribou would be wintering in areas adjacent to the potential highway/railroad corridor.

Recent data on the Denali caribou herd's seasonal distribution, movements, and population size is available from NPS and BRD (the Biological Resources Division of the U.S. Geological Survey) unpublished telemetry data (1987 through present). Adams et al. (1989) provides information on population status and a historical population summary, while Singer (1986b) includes references to caribou numbers and movement through the study area beginning in 1917. Radio-telemetry data from 1976–80 can be found in NPS reports. Historical data on distribution and movements is available from numerous sources summarized in Singer and Dalle-Molle (1985).

Data needs: Existing data should be adequate for NEPA evaluations.

Moose. Moose occur at densities typical of Interior Alaska along the entire corridor. Early winter estimates of distribution and abundance are available in NPS reports. Results of the 1986 and 1991 moose surveys are provided by Meier (1987) and Meier et al. (1991). Little other data on moose movements or critical habitats is available. Viewing opportunities would be similar to that of the Denali park road.

Data needs: Additional information on moose abundance, distribution, movements, and habitat along the corridor would be necessary.

Wolves. Wolves are common along the corridor. Observations since 1985 indicate that about seven wolf packs have used the area adjacent to the transportation corridor during this period. A wealth of information is available with Mech et al. (1996) providing information on wolf demography and distribution. Opportunities to see wolves would be similar to the eastern parts of the park road. The opportunity to see wolves would increase in the spring when caribou are calving along the corridor route.

Data needs: Existing data should be adequate for NEPA evaluations.

Bear. Grizzly bears and black bears can both be found along the corridor. Areas to the north of the proposed route are more typical of black bear habitat while typical grizzly habitat is found south of the corridor. Grizzly bear studies nearby provide some information on relative density and movements. Grizzly densities along the Stampede corridor are likely lower than along the Clearwater Fork and Moose Creek. Dean (1987) gives a grizzly bear density estimate for Denali National Park. The USGS Biological Resources Division has unpublished grizzly bear distribution, movement, and density information. No information exists for black bear abundance in the corridor area.

Opportunities to see bears along the Stampede Trail would be less than along the park road due to reduced bear densities and the potential for bear concealment due to the height of vegetation.

Data needs: Additional information on bear abundance, distribution, movements, and habitat along the corridor would be necessary, especially for black bear.

Threatened or Endangered Species. Preliminary investigation indicates there are no threatened or endangered species along the study area.

Data needs: Additional analysis would determine whether any threatened or endangered species occur in the study area and potential impacts, if any, from new north access developments.

SOCIOCULTURAL RESOURCES

Visitor Use Activities. Very little quantitative information exists concerning visitor-use activities along the transportation corridor. Visitor use in this area is relatively low. Information provided by various user groups indicates that portions of the route are used for horseback riding, dog mushing, snowmachining, hiking, camping, trapping, fishing, and hunting.

Data Needs: Data should be collected along the corridor to identify existing uses and to quantify current use levels in the area. Information should include types of uses, locations of specific uses, volume of use, duration, and frequency of use. Baseline data should be collected for current consumptive uses such as sportfishing, hunting, and trapping that are occurring along the route. Information should include species harvested, spatial extent of harvest, amount of harvest, harvest technique, means of access, number of harvesters, and location of access routes.

Cultural Resources. Numerous cultural resources have been identified along or adjacent to the corridor. There are about 100 known sites along the Stampede corridor and the Clearwater/Myrtle and Moose Creeks. The old Eureka/Kantishna Historic Mining District is included in the corridor and has been determined to be eligible for listing on the National Register of Historic Places by the Alaska state historic preservation office. A formal nomination to the national register is in preparation. The probability of other sites existing in or near the corridor is high.

Data needs: No additional studies would be needed for a NEPA analysis to evaluate the impacts on cultural resources resulting from the development of the north access corridor. However, the National Park Service would survey any potential road/railroad transportation alignment to determine the presence, extent, and significance of any previously unknown archeological or cultural resources before finalizing the construction plans and implementing any action along the potential route.

Subsistence. Local communities that harvest resources for subsistence purposes within or near the proposed road/railroad corridor include Nenana, Healy, Cantwell, Kantishna, and Parks Highway (mileposts 216-239). Although not currently harvesting resources in the proposed transportation corridor, the communities of Lake Minchumina and Anderson would be vulnerable to secondary impacts associated with nonlocal use of nearby areas resulting from improved access.

Sources of information concerning subsistence uses along the potential road/railroad corridor include NPS data files, mapped data, and Alaska Department of Fish and Game harvest/sealing records. Other studies that contain information on subsistence activities in the road/railroad corridor include Shinkwin and Case 1984, Wolfe et al. 1990, and Bishop 1978. Andersen (1983) provides a subsistence bibliography for the Interior Alaska region, and Schneider et al. 1984 provides a historical perspective to land use in the northern additions to the park, which includes the corridor. Other sources of general subsistence information include Schroeder et al. 1987, Gudgel-Holmes 1988, and National Park Service 1991.

Data Needs: The data on subsistence uses of the proposed corridor area is dated and may not accurately depict current-use patterns and harvest levels. Consequently, these data will be of limited value in preparing a NEPA analysis of the potential impacts of a transportation corridor on the subsistence activities of local communities.

Updated subsistence land and resource use information would be needed for Anderson, Healy, McKinley Village, and Cantwell, as well as for subdivisions and other households along the Parks Highway not affiliated with a particular community. Baseline subsistence studies would be needed for Nenana, Kantishna, and Lake Minchumina. A description of the current subsistence land use activities of communities in or adjacent to the proposed transportation corridor should be prepared. Information should include resources harvested, spatial extent of harvest, amount of harvest, harvest technique, means of access, number of harvesters, and location of access routes and facilities. This description should include a summary of the current hunting, fishing, and trapping regulations within the study area.

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